In re Patent Application of:
KAMENOFF
Serial No. **10/694,635**
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In the Claims:

Claims 1-23 (CANCELLED)

24. (NEW) A self-heating battery, comprising:

a battery;

a heating element operatively connected to the battery and powered therefrom for heating the battery;

a temperature sensor circuit operatively connected to the heating element for detecting when the battery is below a temperature where available battery capacity is limited and turning on the heating element to raise the temperature sufficiently so that the battery delivers a substantial majority of its rated capacity;

a charge protection circuit operative with the battery and comprising an operational amplifier having an output and a transistor connected to said output of said operational amplifier and operative for sensing current through the transistor by measuring its voltage drop such that when the battery is in a quiescent state the operational amplifier senses no voltage across the transistor and biases the transistor off, wherein when a charge potential is applied to the battery the transistor is off ensuring that no charge current can flow and when a charge is applied, discharge current flows such that the operational amplifier senses the forward voltage drop and when the drop exceeds a predetermined amount, the operational amplifier turns the transistor on, clamping its forward voltage drop a predetermined amount such that charge protection has minimal effect on the battery terminal voltage; and

a discharge current circuit operative with said heating element for locking out the heating element when the battery is not in use so as to prevent the heating element from discharging the battery when stored at cold temperatures and turning off the heating element when the discharge current is high to allow the entire available energy from the battery to be delivered to a load during periods of peak demand.

25. (NEW) The self-heating battery according to Claim 24, wherein said transistor connected to said output of said operational amplifier comprises a field effect transistor.

26. (NEW) The self-heating battery according to Claim 24, wherein said temperature sensor circuit comprises an operational amplifier having an output and a transistor connected at the output and connected to said heating element.

27. (NEW) The self-heating battery according to Claim 26, wherein said transistor within said temperature sensor circuit comprises a field effect transistor.

28. (NEW) The self-heating battery according to Claim 24, wherein said discharge current circuit includes a resistor for sensing a load such that when the load is not sensed and the battery is not in use.

29. (NEW) The self-heating battery according to Claim 24, wherein said charge protection circuit further comprises a load sensor.

30. (NEW) The self-heating battery according to Claim 29, wherein said load sensor comprises a resistor.